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09/830,532	06/25/2001	Naoto Iwahashi	450101-02664	9643

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EXAMINER
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SHORTLEDGE, THOMAS E

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/830,532

**Applicant(s)**

IWAHASHI, NAOTO

**Examiner**

Thomas E Shortledge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date see below.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

2/27/02  
4/26/01  
8/23/04

## **DETAILED ACTION**

### ***Specification***

1. It is noted that this application appears to claim subject matter disclosed in prior Application No. Japan P11-245461, filed 08/31/1999. A reference to the prior application must be inserted as the first sentence(s) of the specification of this application or in an application data sheet (37 CFR 1.76), if applicant intends to rely on the filing date of the prior application under 35 U.S.C. 119(e) or 120. See 37 CFR 1.78(a). For benefit claims under 35 U.S.C. 120, the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of all nonprovisional applications. Also, the current status of all nonprovisional parent applications referenced should be included.

If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference to the prior application must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months

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from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

### ***Claim Objections***

2. Claims 1-18 are objected to because of the following informalities: The English translations of the claims are missing grammar articles. Appropriate correction is required.

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3. Claims 3 and 4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 3 recites a dictionary storage means in which the dictionary is stored; however, claim 2 recites the dictionary stores the registered word along with the concept function. Since claim 2 is able to store the registered word, it would be inherent that if there is a storage means for storing the word in the dictionary, it would also store the dictionary.

Claim 4 recites the concept notation function is the function which represents information obtained from the matter that the word indicates; however, claim 1 recites a concept notation function which is a function for representing a matter that the word indicates.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-7, 10-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Segawa (4,905,287).

As to claims 1, 4, 10 and 11, Segawa teaches:

inputting a word along with a concept notation function (probability density function) which is a function for representing a matter that the word indicates (a speech signal is inputted to an acoustic processing section, and each word has a probability density function assigned to it, col. 3, lines 47-48, and col. 4, lines 23-25);

calculating word analogousness which is the analogousness, between the word and the registered word, on the basis of the concept notation function (calculating the similarity between reference data phoneme, and the input feature data, col. 3, lines 63-65).

As to claims 2 and 3, Segawa teaches the dictionary stores the registered word along with the concept notation function for the registered word (the reference is stored in multiple similarity (reference) phoneme feature memory, col. 3, lines 63-65).

As to claim 5, Segawa teaches the concept notation function is the function which represents information obtained from output from sensor means for sensing stimulus given from the matter that the word indicates (the probability density function is calculated from the parameters of acoustic input, col. 3, lines 59-60, and col. 4, lines 12-13, and 23-25).

As to claim 6, Segawa teaches a sensor means is a device for converting light or sound into an electric signal, a touch sensor, a temperature sensor or an acceleration sensor (a microphone for accepting the input, col. 3, lines 53-54), and wherein the concept notation function is the function which represents a parameter obtained by observing the matter the word indicates by the sensor means (the probability density function is calculated from the parameters of acoustic input, col. 3, lines 59-60, and col. 4, lines 12-13, and 23-25).

As to claim 7, Segawa teaches the concept notation function is a probability density function or a discrete probability distribution function (a probability density function, col. 4, lines 23-25).

As to claims 12, 13, 17 and 18, Segawa teaches:

function generating means for generating concept notation function which is function for representing information obtained from the registered word which is in the dictionary indicates (a speech signal is inputted to a acoustic processing section, and each word has a probability density function assigned to it, col. 3, lines 47-48, and col. 4, lines 23-25); and

correspondence providing means for allowing the registered word and the concept notation function with respect to that registered word to correspond to each other, (a similarity calculation section, that calculates multiple similarity between



reference pattern data and the input feature pattern data using probability density functions, col. 3, lines 61-65, and col. 4, lines 23-25).

As to claim 14, Segawa teaches the concept notation function is the function for representing information obtained from the output of the sensor means (microphone) for sensing stimulus given from the matter that the word indicates, (the input is received through a microphone, where the feature pattern data is extracted from the input, col. 3, lines 52-53, and 59-60).

As to claim 15, Segawa teaches a sensor means is a device for converting light or sound into an electric signal, a touch sensor, a temperature sensor or an acceleration sensor (a microphone for accepting the input, col. 3, lines 53-54), and

wherein the concept notation function is the function which represents a parameter obtained by observing the matter the word indicates by the sensor means (a probability density function for the data is extracted from the speech input, where the data is feature pattern data of the speech input, col. 3, lines 59-60).

As to claim 16, Segawa teaches the concept notation function is a probability density function or a discrete probability distribution function (a probability density function for the parameter of the sample, col. 4, lines 23-25).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Segawa as applied to claim 1 above, and further in view of Komori et al. (6,108,628).

As to claim 8, Segawa teaches calculating means for calculating the word analogousness between the word and the registered word between the concept notation function (a similarity calculation section, that calculates multiple similarity between reference pattern data and the input feature pattern data, col. 3, lines 61-65).

Segawa does not teach using the Bhattacharyya distance or Kullback divergence to find the similarity.

However, Komori et al. teach using Bhattacharyya distance to find the similarity between two speaker inputs, (col. 4, lines 34-35, and 56-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the similarity finding means of Segawa with the Bhattacharyya distance of Komori et al. to increase the ability of the system to enable

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high-speed speech recognition with a high recognition rate, as taught by Komori et al. (col. 1, lines 45-47).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Segawa as applied to claim 9 above, and further in view of Chou et al. (5,797,123).

As to claim 9, Segawa teaches:

the input means inputs words along with the concept notation function (probability density function) for the respective words (word input signal (abstract) and input parameters creating a probability density function);

the dictionary stores sets of registered words in which a plurality of the registered words are arranged along with the concept notation for respective registered words, (a reference phoneme feature memory used for a similarity measure used for finding the similarity between the reference pattern data and the input feature pattern data, col. 3, lines 62-65);

word analogousness calculating means for calculating word analogousness which is the analogousness between the word and the registered word from the word analogousness between respective words constituting the word and the registered words constituting the registered word corresponding to the respective words (finding the similarity between reference pattern data stored in multiple similarity (reference) phoneme feature memory and the input pattern data, col. 3, lines 61-65).

Segawa does not teach:

inputting word sets;  
word trains; nor  
word train generating means for generating word trains in which words  
constituting the word set are arranged.

However Chou et al. teach:  
inputting word sets (key-phrase matching, col. 5, line 1);  
word trains (using key-phrases, col. 5, line 1, and 15);  
word train generating means for generating word trains in which words  
constituting the word set are arranged (creating longer word phrases by merging the  
nodes which represent the key-phrases or filler phrases, col. 7, lines 42-44).

Therefore it would have been obvious to one of ordinary skill in the art at the time  
of the invention to combine the word and concept function input of Segawa with they  
key-phrase identifying process of Chou et al. to incorporate more distinctive information,  
resulting in more stable acoustic matching, both in the recognition phrase and in the  
verification phrase, as taught by Chou et al. (col. 5, lines 16-19).

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to  
applicant's disclosure. Yamada et al. (5,692,097), Russell et al. (5,791,904), and  
Hirakawa et al. (Inherited Feature-based Similarity Measure Based on Large Semantic  
Hierarchy and Large Text Corpus).

Yamada et al. teach finding the similarity between an input voice and a standard patterned word.

Russell et al. teach a speech training aid, where the aid is able to compare an input to stored acoustic models.


Hirakawa et al. teaches an inherited feature similarity measure between objects based on their features.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E Shortledge whose telephone number is (703)605-1199. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703)306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TS 2/14/05

  
TĀLIVALDIS IVARS ŠMITS  
PRIMARY EXAMINER